

DX2 Series - 4" Tube Heater Installation, Operation, Maintenance and Parts Manual*

⚠ WARNING: This heater must be installed and serviced by trained gas installation and service personnel only! Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operating and maintenance instructions thoroughly before installing or servicing this equipment. Protect yourself and others by observing all safety information. Retain instructions for future reference.

DX2 Series

* For complete installation instructions, see Generic IOM this piece was inserted within. Also available at www.reverberray.com.

Project: _____ Date: _____
Location: _____
City: _____ State: _____ Zip: _____
Customer Name: _____
Local Representative: _____
Contractor: _____
Engineer: _____
Address: _____
City: _____ State: _____ Zip: _____
Phone #: _____ Serial #: _____
Model #: _____ Date of Installation: _____
Notes: _____

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Models v.6/03

- Warranty** 1. Register online at www.reverberray.com/warranty
Registration 2. Complete the information above and fax to Detroit Radiant Products Co.
Options: 3. Complete the information above and mail to Detroit Radiant Products Co.

Qty.	Model #	Gas Type (circle one)	BTU's	Straight Length	U-Tube Length	Weight	Typical Mount Height	Combustion Chamber	Radiant Emitter Tube	"Type" Tube Pkg #1	"Type" Tube Pkg. #2	Baffle Pieces
	DX-2 20-50	N or LP	50,000	21'-7"	13'-0"	120 #	10' - 15'	Aluminized	4" Aluminized	20-4 Alum	N/A	5
	DX-2 20-60	N or LP	60,000	21'-7"	13'-0"	120 #	11' - 16'	Aluminized	4" Aluminized	20-4 Alum	N/A	5
	DX-2 20-75	N or LP	75,000	21'-7"	13'-0"	120 #	12' - 18'	Aluminized	4" Aluminized	20-4 Alum	N/A	5
	DX-2 20-100	N or LP	96,000	21'-7"	13'-0"	120 #	13' - 20'	Aluminized	4" Aluminized	20-4 Alum	N/A	5
	DX-2 30-50	N or LP	50,000	31'-3"	**17'-10"	160 #	10' - 15'	Aluminized	4" Aluminized	30-4 Alum	N/A	4
	DX-2 30-60	N or LP	60,000	31'-3"	**17'-10"	160 #	11' - 16'	Aluminized	4" Aluminized	30-4 Alum	N/A	4
	DX-2 30-75	N or LP	75,000	31'-3"	**17'-10"	160 #	12' - 18'	Aluminized	4" Aluminized	30-4 Alum	N/A	4
	DX-2 30-100	N or LP	100,000	31'-3"	**17'-10"	160 #	13' - 20'	Aluminized	4" Aluminized	30-4 Alum	N/A	5
	DX-2 30-125	N or LP	125,000	31'-3"	**17'-10"	160 #	15' - 25'	Aluminized	4" Aluminized	30-4 Alum	N/A	5
	DX-2 40-50	N or LP	50,000	40'-11"	22'-8"	190 #	10' - 15'	Aluminized	4" Aluminized	40-4 Alum	N/A	2
	DX-2 40-60	N or LP	60,000	40'-11"	22'-8"	190 #	11' - 16'	Aluminized	4" Aluminized	40-4 Alum	N/A	2
	DX-2 40-75	N or LP	75,000	40'-11"	22'-8"	190 #	12' - 18'	Aluminized	4" Aluminized	40-4 Alum	N/A	2
	DX-2 40-100	N or LP	100,000	40'-11"	22'-8"	190 #	13' - 20'	Aluminized	4" Aluminized	40-4 Alum	N/A	4
	DX-2 40-125	N or LP	125,000	40'-11"	22'-8"	190 #	15' - 25'	Aluminized	4" Aluminized	40-4 Alum	N/A	4
	DX-2 40-150	N or LP	150,000	40'-11"	22'-8"	190 #	16' - 30'	Titanium	4" Aluminized	40-4 Titan	N/A	4
	DX-2 40-175	N or LP	175,000	40'-11"	22'-8"	190 #	17' - 35'	Titanium	4" Aluminized	40-4 Titan	N/A	4
	DX-2 50-100	N or LP	100,000	50'-7"	**27'-6"	235 #	13' - 20'	Aluminized	4" Aluminized	40-4 Alum	10-4-Alum	2
	DX-2 50-125	N or LP	125,000	50'-7"	**27'-6"	235 #	15' - 25'	Aluminized	4" Aluminized	40-4 Alum	10-4-Alum	4
	DX-2 50-150	N or LP	150,000	50'-7"	**27'-6"	235 #	16' - 30'	Titanium	4" Aluminized	40-4 Titan	10-4-Titan	4
	DX-2 50-175	N or LP	175,000	50'-7"	**27'-6"	235 #	17' - 35'	Titanium	4" Aluminized	40-4 Titan	10-4-Titan	2
	DX-2 50-200	N or LP	200,000	50'-7"	**27'-6"	235 #	18' - 40'	Titanium	4" Aluminized	40-4 Titan	10-4-Titan	2
	DX-2 60-125	N or LP	125,000	60'-3"	32'-4"	265 #	15' - 25'	Aluminized	4" Aluminized	40-4 Alum	20-4-Alum	2
	DX-2 60-150	N or LP	150,000	60'-3"	32'-4"	265 #	16' - 30'	Titanium	4" Aluminized	40-4 Titan	20-4-Titan	2
	DX-2 60-175	N or LP	175,000	60'-3"	32'-4"	265 #	17' - 35'	Titanium	4" Aluminized	40-4 Titan	20-4-Titan	2
	DX-2 60-200	N or LP	200,000	60'-3"	32'-4"	265 #	18' - 40'	Titanium	4" Aluminized	40-4 Titan	20-4-Titan	2
	DX-2 70-175	N or LP	175,000	69'-11"	**37'-2"	300 #	17' - 35'	Titanium	4" Aluminized	40-4 Titan	30-4-Titan	2
	DX-2 70-200	N or LP	200,000	69'-11"	**37'-2"	300 #	18' - 40'	Titanium	4" Aluminized	40-4 Titan	30-4-Titan	2
	DX-2 80-200	N or LP	200,000	79'-7"	42'-0"	330 #	18' - 40'	Titanium	4" Aluminized	40-4 Titan	40-4-Titan	2

** Model requires 5EA-Sub accessory package.



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Form# LIODX2-3M-3/04 (LES)
Replaces Form# LIODX2-5M-3/03



DX2 Series V.6/03

Warnings and Clearances to Combustibles

⚠ WARNING!

NOT FOR RESIDENTIAL USE!

Do not use in the home, sleeping quarters, attached garages, etc.

⚠ WARNING!

This heater must be installed and serviced by trained gas installation and service personnel only. Read and understand these instructions thoroughly before attempting to install, operate or service this heater. Failure to comply could result in personal injury, asphyxiation, death, fire, and/or property damage. Retain these instructions for future reference.

⚠ WARNING!

This is not an explosion-proof heater. Where there is the possibility of exposure to flammable vapors, consult the local fire marshal, the fire insurance carrier and other authorities for approval of the proposed installation.

⚠ WARNING!

In locations used for the storage of combustible materials, signs must be posted to specify the maximum permissible stacking height to maintain the required clearances from the heater to the combustibles. Signs must either be posted adjacent to the heater thermostats or in the absence of such thermostats in a conspicuous location.

⚠ WARNING!

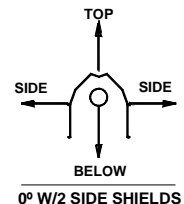
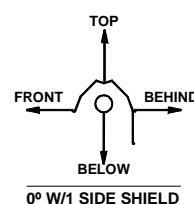
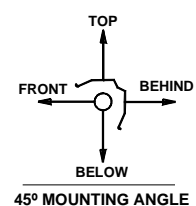
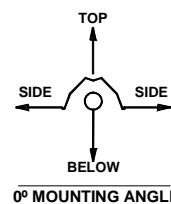
Failure to comply with the stated clearances to combustibles could result in personal injury, death and/or property damage.

⚠ WARNING!

This heater should be installed so that the minimum clearances to vehicles, as marked on the heater, will be maintained. If vehicle lifts are present, ensure that these clearances will be maintained from the highest raised vehicle.

CLEARANCES TO COMBUSTIBLES (IN.)

MODEL NO.	MOUNTING ANGLE	SIDE		TOP	BELOW
		FRONT	BEHIND		
DX-2 (20,30,40)-50 [N,P]	0°	9	9	6	47
	45°	39	8	10	47
	0°	29	8	6	47
	0°	9	9	6	47
	0°	7	7	6	30
DX-2 (20,30,40)-60 [N,P]	0°	9	9	6	47
	45°	39	8	10	47
	0°	29	8	6	47
	0°	9	9	6	47
	0°	7	7	6	30
DX-2 (20,30,40)-75 [N,P]	0°	9	9	6	60
	45°	39	8	10	60
	0°	29	8	6	60
	0°	9	9	6	60
	0°	7	7	6	30
DX-2 (20,30,40,50)-100 [N,P]	0°	14	14	6	66
	45°	39	8	10	66
	0°	29	8	6	66
	0°	16	16	6	66
	0°	7	7	6	30
DX-2 (30,40,50,60)-125 [N,P]	0°	20	20	6	76
	45°	58	8	10	76
	0°	42	8	6	76
	0°	20	20	6	76
	0°	7	7	6	30
DX-2 (40,50,60)-150 [N,P]	0°	24	24	6	81
	45°	58	8	10	81
	0°	42	8	6	81
	0°	23	23	6	81
	0°	11	11	6	44
DX-2 (40,50,60,70)-175 [N,P]	0°	34	34	6	92
	45°	63	8	10	92
	0°	50	8	6	92
	0°	30	30	6	92
	0°	11	11	6	44
DX-2 (50,60,70,80)-200 [N,P]	0°	41	41	6	94
	45°	63	8	10	94
	0°	54	8	6	94
	0°	30	30	6	94
	0°	11	11	6	44



DX2 Series Mechanical Instructions

This supplement is designed to address the specifics of the DX2 Series - See page 12 for specific product features.

Product Summary

DX2 Series heaters are available from 20 to 80 foot, 50,000 to 200,000 BTU's, natural or propane gas. DX2 Series are positive pressure, single stage heaters and feature coated aluminized steel for it's radiant heat exchangers. DX2 Series may also be upgraded to stainless steel for harsh environment applications.

Operational Features

DX-2 Series heaters include a gas cock, flex connector and all hanging accessories. Most importantly, these heaters feature coated aluminized heat exchangers covered by highly polished aluminum reflectors for maximum efficiency. These heaters also feature operational indicator lights, potted circuit boards, hot surface ignition and turbulator baffles (for improved efficiencies).

Specific Mechanical Instructions

Be sure to indentify the titanium (150-200 MBTU/H) combustion chamber and place as the first tube section directly following the burner box. The identification sticker found on the swagged end of the tubing will identify the titanium combustion tube.

175,000 and 200,000 BTU/H models must be installed with a stainless steel tube clamp at the second joint of the exchanger between the first and second radiant tubes.

Note baffle quantities for your model and place baffles in the last tubes (farthest from the burner) as shown below and on pages 13-14 of the generic IOM.

Tube Installation Sequence

B	Aluminized (50-100 MBTU/H)	Aluminized					
		*					
B	Aluminized (50-125 MBTU/H)	Aluminized	Aluminized				
			*				
B	Aluminized or Titanium (50-125 MBTU/H) (150-175 MBTU/H)	Aluminized	Aluminized	Aluminized			
				*			
B	Aluminized or Titanium (50-125 MBTU/H) (150-200 MBTU/H)	Aluminized	Aluminized	Aluminized	Aluminized		
					*		
B	Aluminized or Titanium (50-125 MBTU/H) (150-200 MBTU/H)	Aluminized	Aluminized	Aluminized	Aluminized	Aluminized	
						*	
B	Aluminized or Titanium (50-125 MBTU/H) (150-200 MBTU/H)	Aluminized	Aluminized	Aluminized	Aluminized	Aluminized	Aluminized
							*

B = Burner Location

* Baffle Location



DX2 Series V.6/03

Electrical Requirements

- ◆ 120 Volt - 60 HZ
- ◆ Starting Current 4.8 Amps
- ◆ Running Current 1.1 Amps

Gas Requirements

- ◆ Manifold Pressure
 - Nat. 3.5" • LP. 10.0"
- ◆ Minimum Inlet Pressure
 - Nat. 5.0" • LP. 11.0"
- ◆ Maximum Inlet
 - Nat. 14.0" • LP. 14.0"

Ventilation Requirements

- ◆ Consult the generic supplement for venting instructions and unvented operation.
- ◆ For unvented operation, there must be a positive air displacement of at least 4.0 CFM per 1000 BTU/H for natural gas or 4.5 CFM per 1000 BTU/H for LP gas. WVE-4 termination cap must also be used.
- ◆ Maximum vent length for all models is 20 ft.

Approved & Required Vent Caps

Sidewall Single

- ◆ 4" Duravent sidewall vent kit (4-DSK).
- ◆ 4" Vent terminal (SWD-4).

Sidewall Dual (sharing common t-stat)

- ◆ 6" Duravent sidewall vent kit (6-DSK).
- ◆ 6" Vent terminal (SWD-6).

Roof Single

- ◆ Approved 4" rooftop rain cap (RVC-4).

Roof Dual (sharing common t-stat)

- ◆ Approved 6" rooftop rain cap (RVC-6).

IMPORTANT: Do not use sidewall caps for roof venting and do not use roof caps for sidewall venting.

Theory of Operation

Starting Circuit

When voltage is applied to L1 and L2 (see diagram on right), a circuit is completed from L1 via the blower motor to L2. The blower fan is mounted in the control box and rated to supply sufficient air for combustion.

Air pressure generated by the blower will cause the normally open differential pressure switch to close. Another circuit is completed from L1 to the hot surface ignition control and back to L2. There is a five second delay, then the glo-bar is powered. After the glo-bar has been powered for 45 seconds, the control causes the gas valve to open and initiates the ignition trial.

Power to the glo-bar is shut off during the last two or three seconds of the ignition trial.

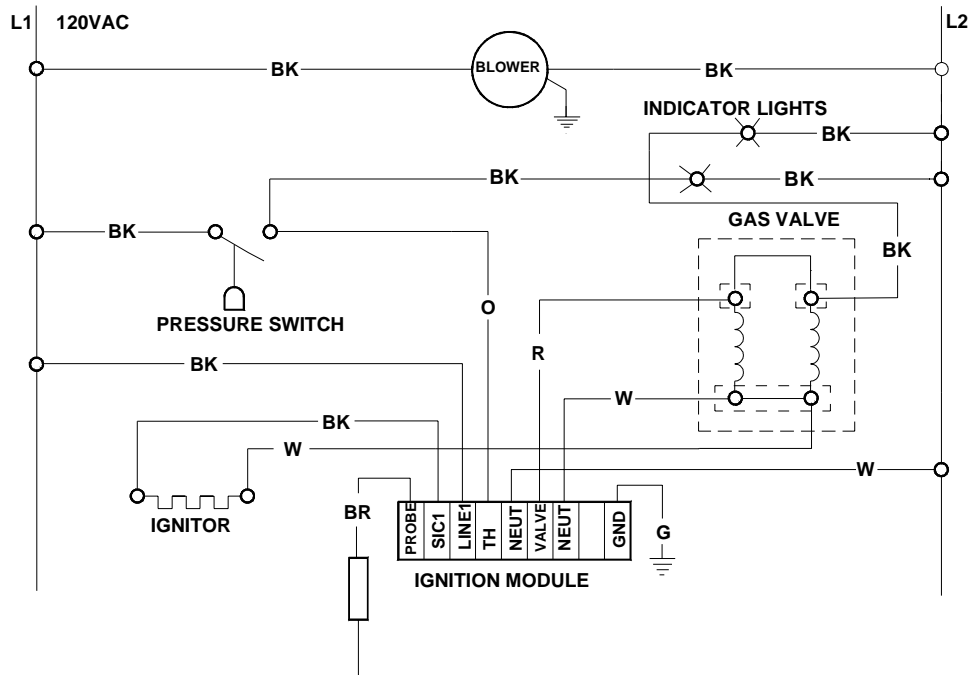
Running Circuit

After ignition, the flame rod monitors the flame. As long as a flame is present, the valve is held open. If the flame is lost, the control acts to close the valve within one second, and a new trial sequence identical to that at start-up is initiated. If proof of flame is not established within 8.5 seconds, the unit will lock out. If lockout occurs, the control can be reset by briefly interrupting the power source.

Internal Wiring Diagrams

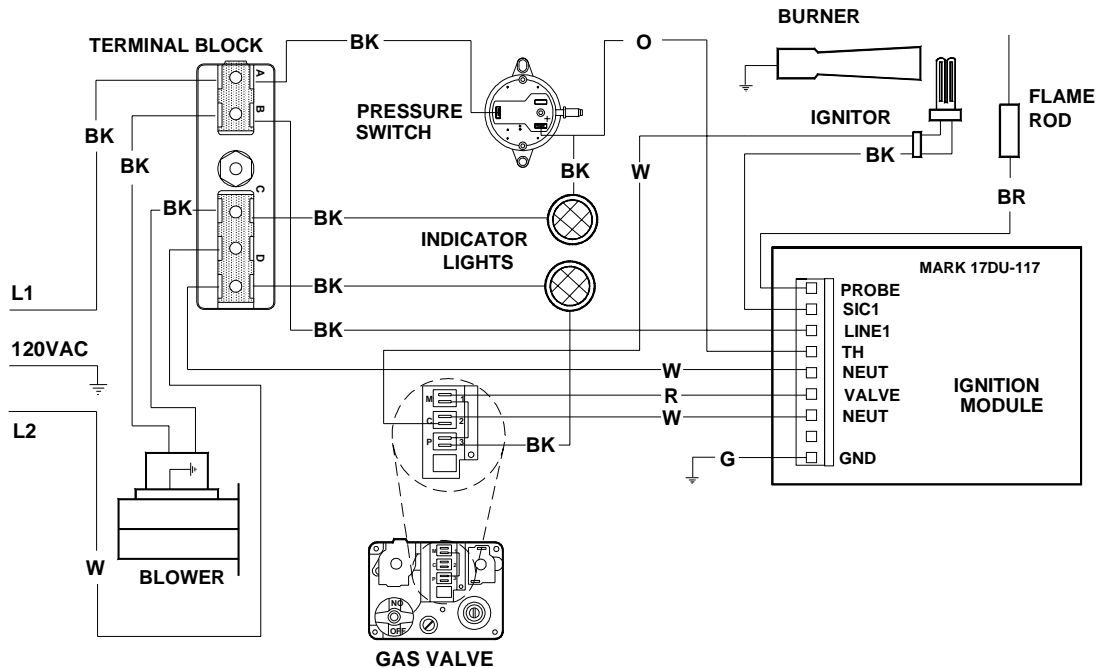
Standard Diagrams

LADDER DIAGRAM - MARK17DU-117 WITH LIGHTS



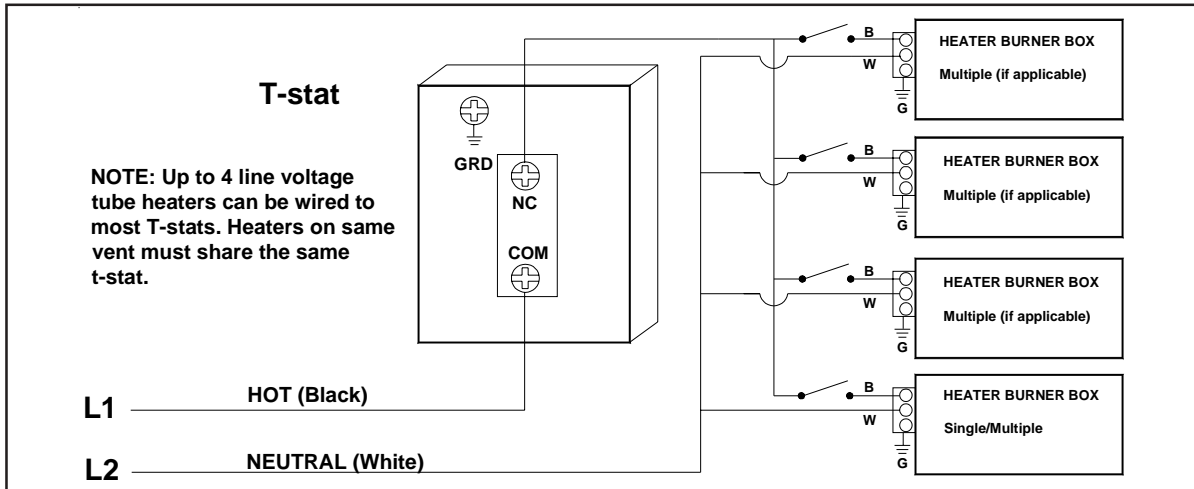
IF ANY OF THE ORIGINAL WIRE AS SUPPLIED WITH THE APPLIANCE MUST BE REPLACED, IT MUST BE REPLACED WITH WIRING MATERIAL HAVING A TEMPERATURE RATING OF AT LEAST 105 C.

BLOCK DIAGRAM - MARK17DU-117 WITH LIGHTS

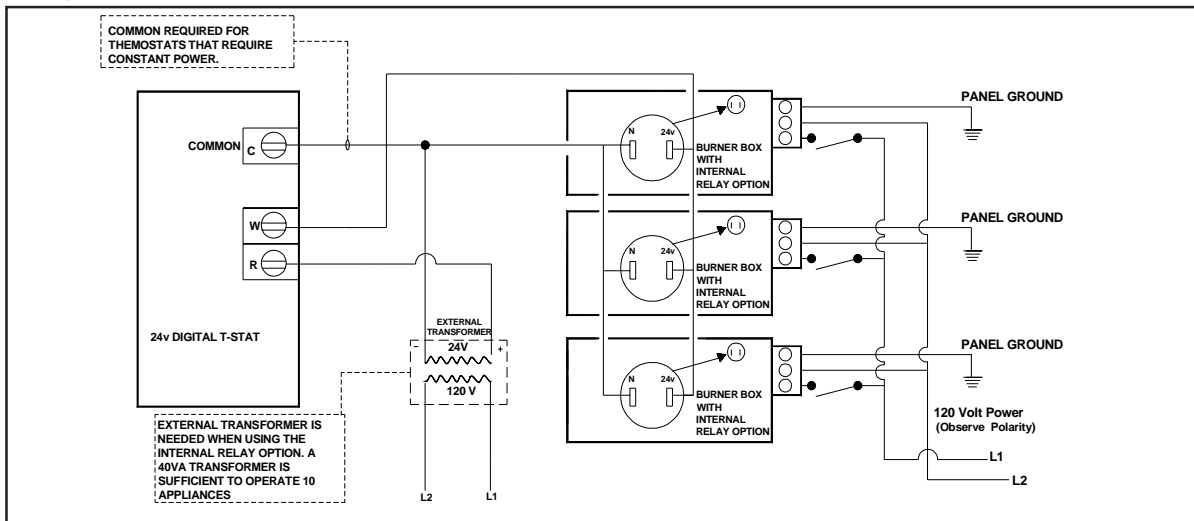


DX2 Series V.6/03

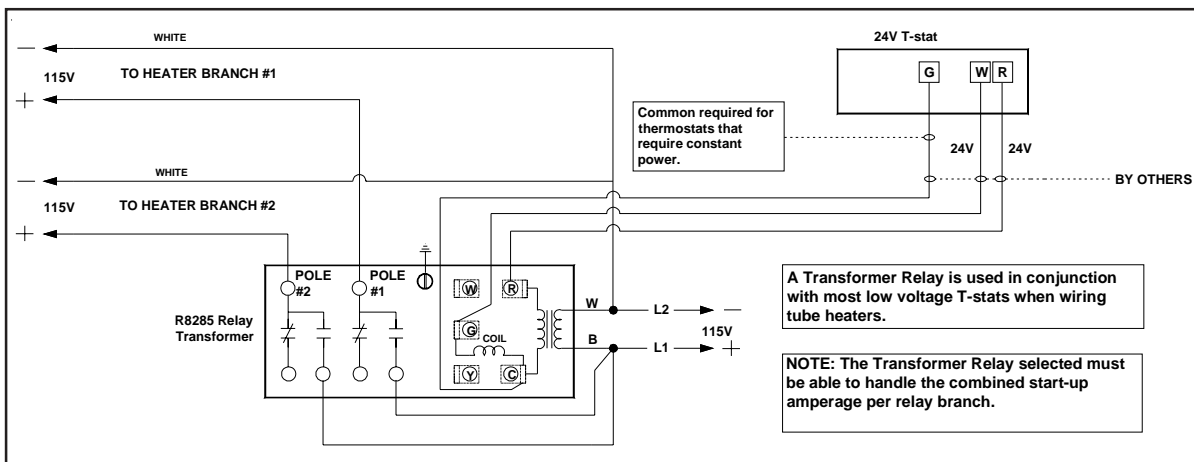
Field Wiring Diagrams



120V Field Wiring for Single/Multiple Line Voltage Heaters



Alternative Field Wiring Diagram for 24VAO (Internal Relay Option).

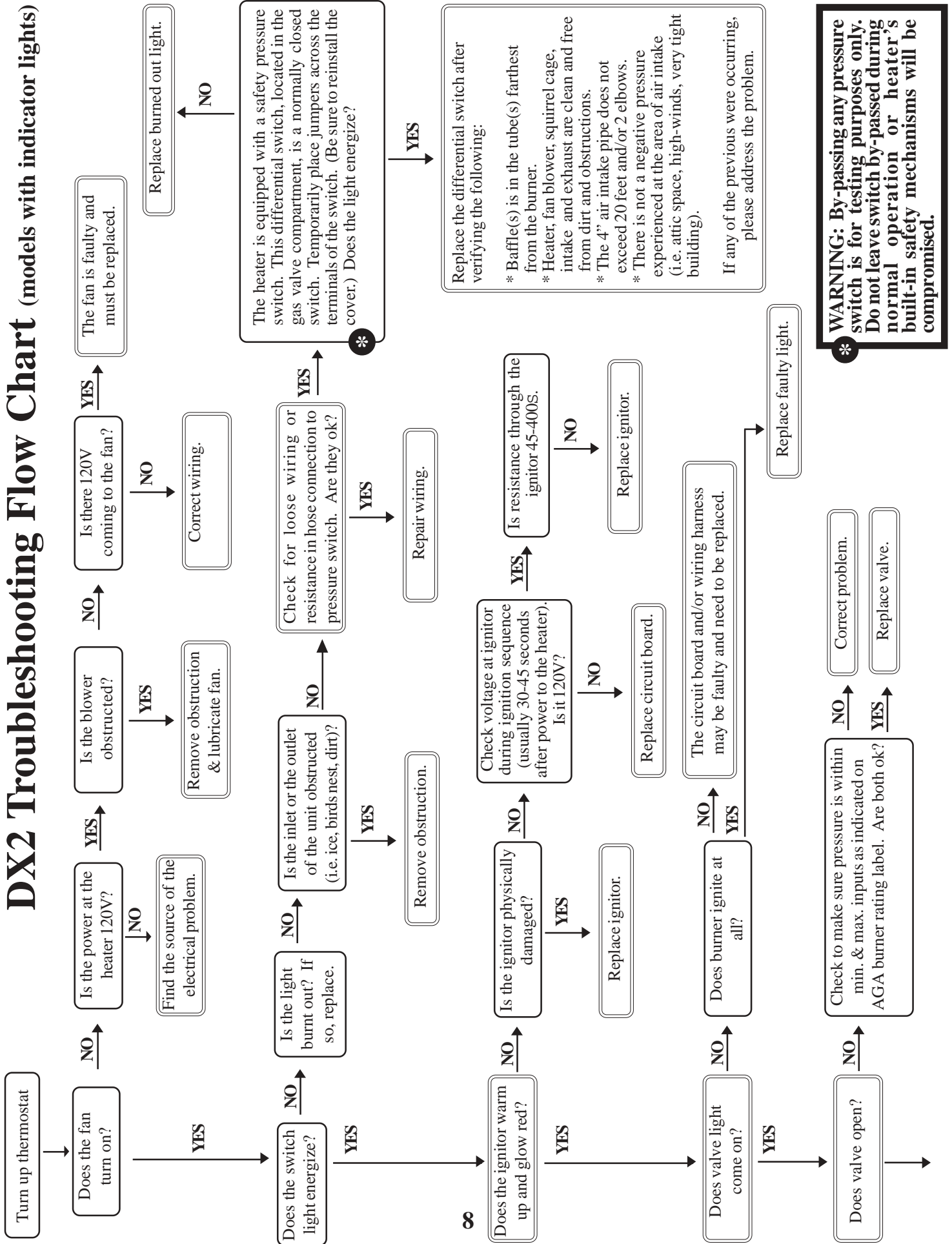


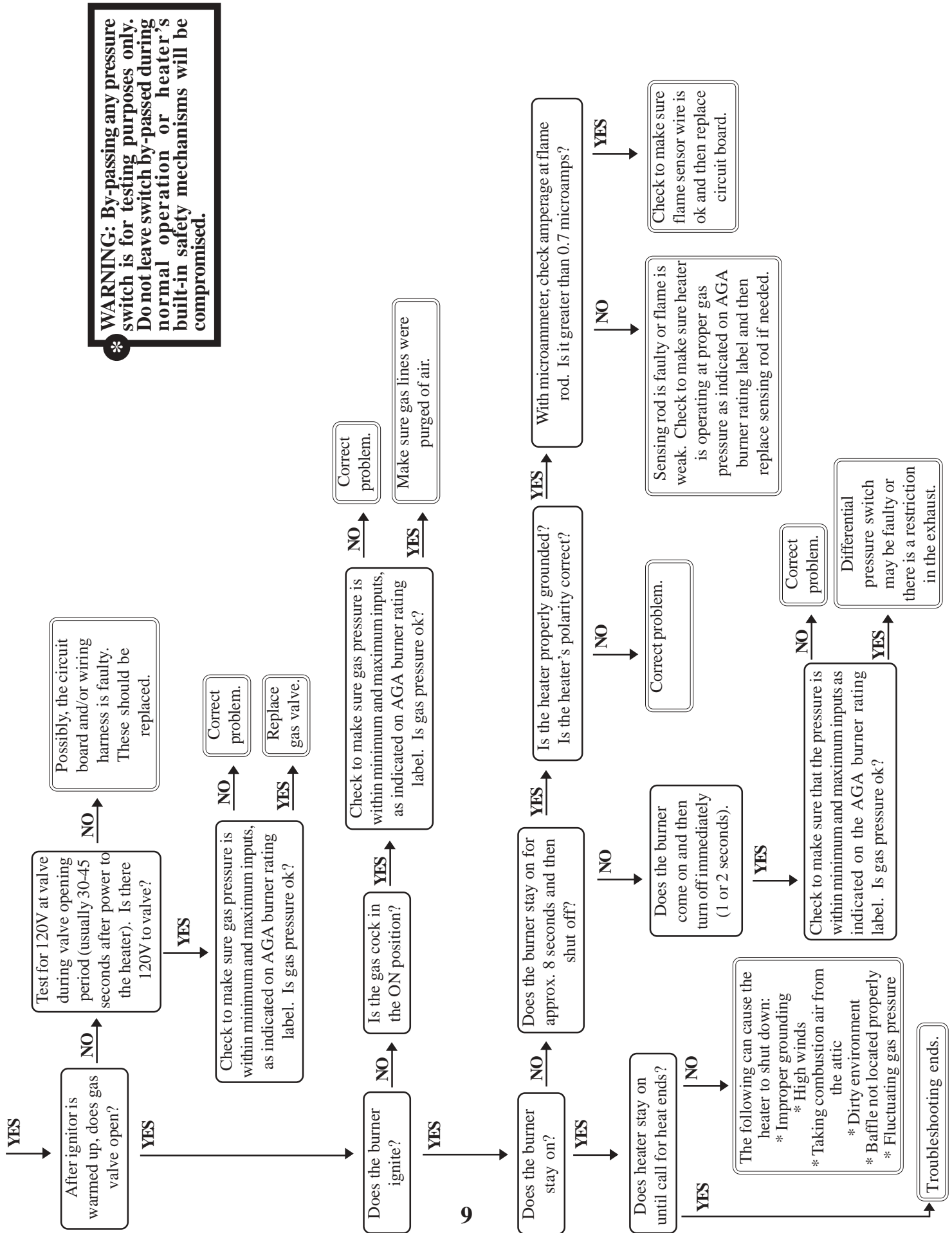
24V T-Stat & Connection for Single/Multiple Heaters - Relay Transformer Required

For 24VAO (Internal Relay Option)



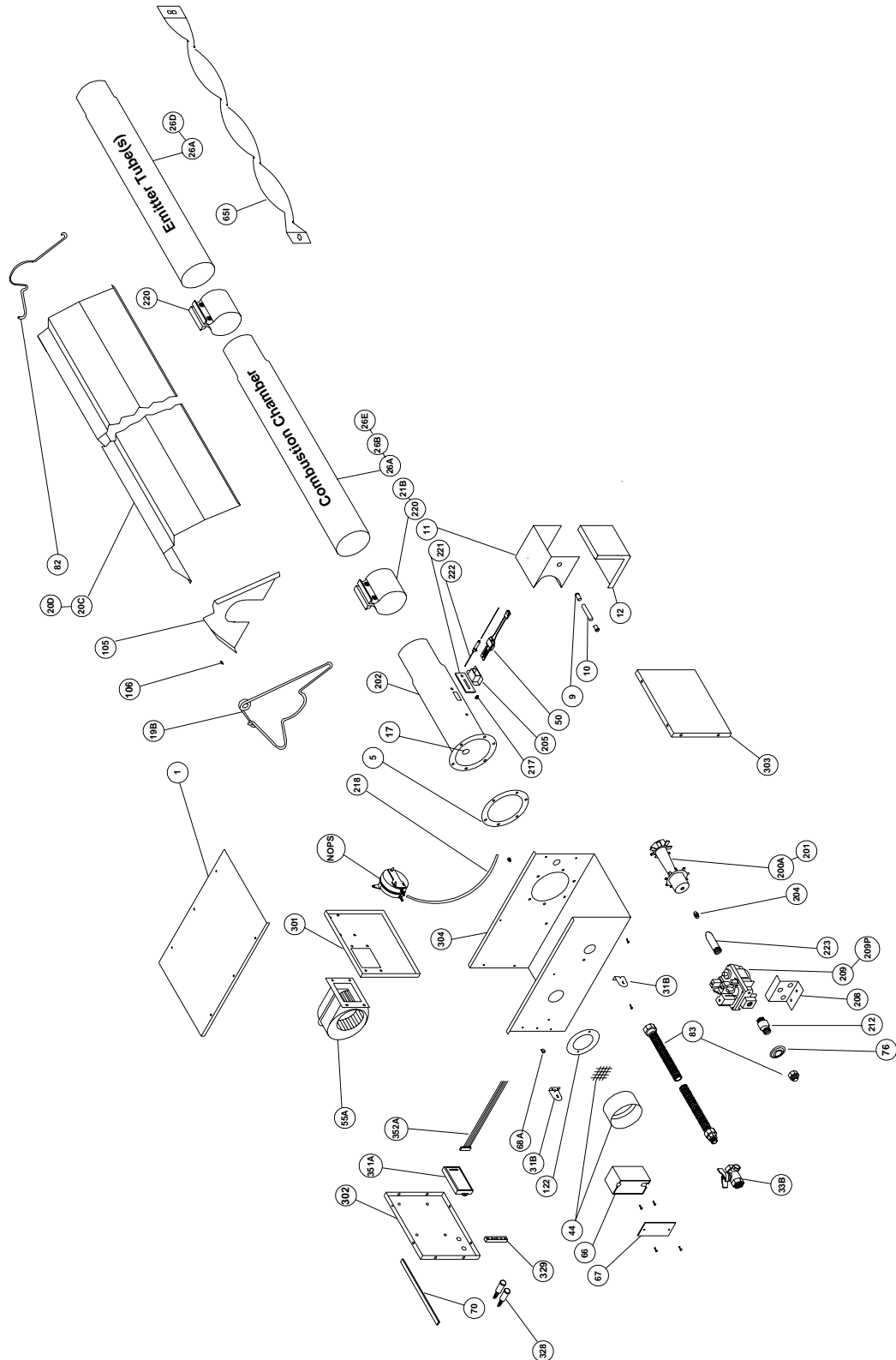
DX2 Troubleshooting Flow Chart (models with indicator lights)





DX2 Series V.6/03

Parts Breakdown



Basic Parts List

DX2 SERIES PARTS LISTING

Part #	Description	Part #	Description
TP-1	CONTROL BOX COVER	TP-200A	BURNER (50 TO 100 MBTU/H)
TP-5	FLANGE GASKET	TP-201	BURNER (125 TO 200 MBTU/H)
TP-9	CONDUIT COUPLING	TP-202	16" BURNER TUBE WITH FLANGE
TP-10	CONDUIT 4" X 1/2"	TP-204	GAS ORIFICE - CONSULT FACTORY
TP-11	GLO-BAR IGNITOR BOX	TP-205	GLO-BAR HOLDER
TP-12	GLO-BAR IGNITOR BOX COVER	TP-208	"Z" MOUNTING BRACKET
TP-17	SIGHT GLASS KIT	TP-209	36E36A-246 GAS VALVE - NAT GAS ASSY
TP-19B	WIRE HANGER W/ SPRING CLIP	TP-209P	36E36A-240 GAS VALVE - LP GAS ASSY
TP-20C	120" ALUMINUM REFLECTOR	TP-212	1/2" X 3" PIPE NIPPLE
TP-20D	120" STAINLESS STEEL REFLECTOR	TP-217	PRESSURE BARB FITTING
TP-21B	TUBE CLAMP	TP-218	PRESSURE SENSE TUBE (VINYL)
TP-26A	10 FT. ALUM. RADIANT/COMBUSTION TUBE	TP-220	STAIN. STL. TUBE CLAMP (175 & 200 MBTU/H)
TP-26B	10 FT. TITANIUM COMBUSTION TUBE	TP-221	GLO-BAR HOLDER GASKET
TP-26D	10 FT. 304 STAINLESS RADIANT TUBE	TP-222	FLAME ROD
TP-26E	10 FT. 409 STAINLESS STEEL COMBUSTION TUBE	TP-223	GAS MANIFOLD
TP-31B	CONTROL BOX BRACKET	TP-301	DIVIDER PANEL W/ P.S. MOUNTING TABS
TP-33B	1/2" GAS COCK	TP-302	LEFT END PANEL W/ LIGHT HOLES
TP-44	AIR ORIFICE W/SCREEN - CONSULT FACTORY	TP-303	RIGHT END PANELS - NO HOLES
TP-50	GLO-BAR IGNITOR	TP-304	CONTROL BOX
TP-55A	FAN BLOWER	TP-328	120V INDICATOR LIGHT
TP-65I	INTERLOCKING 33" BAFFLE SECTION	TP-329	1/4" NEUTRAL TERMINAL BLOCK
TP-66	2" X 4" OUTLET BOX	TP-330	DIVIDER GROMMET
TP-67	2" X 4" OUTLET BOX COVER	TP-331	GREEN SELF TAP GROUND SCREW
TP-68A	STRAIN RELIEF BUSHING	TP-351A	MARK 17DU-117 POTTED CIRCUIT BOARD
TP-70	CONTROL BOX COVER GASKET (PER FOOT**)	TP-352A	LONG WIRING HARNESS FOR 17DU-117
TP-76	RUBBER GROMMET	TP-NOPS	N.O. Pressure Switch (Select switch below, BTU Dependent)
TP-82	REFLECTOR CENTER SUPPORT	(TP-264B)	DIFFERENTIAL PRESSURE SWITCH - 50 TO 100 MBTU/H
TP-83	STAINLESS STEEL FLEX CONNECTOR	(TP-264E)	DIFFERENTIAL PRESSURE SWITCH - 125 TO 150 MBTU/H
TP-105	REFLECTOR END CAP	(TP-264D)	DIFFERENTIAL PRESSURE SWITCH - 175 MBTU/H
TP-106	REFLECTOR CLIP	(TP-264F)	DIFFERENTIAL PRESSURE SWITCH - 200 MBTU/H
TP-111	5' ALUM. TUBE, PAINTED WITH ONE CLAMP		
TP-112	5' REFLECTOR		
TP-122	GASKET FOR AIR ORIFICE & AIR COLLAR		

**6' TOTAL NEEDED TO COVER OUTER EDGES OF BURNER BOX (TP-70)










Kit Contents & Product Features

Kit contents for the DX2 Series are shown below. Reference the proper column for your particular models length.

FILLED BY:		DX-2 SERIES KIT CONTENTS						
TP#	DESCRIPTION	20 FOOT	30 FOOT	40 FOOT	50 FOOT	60 FOOT	70 FOOT	80 FOOT
TP-19B	4" Hangers	3	4	5	6	7	8	9
TP-21B	4" Tube Clamps	2	3	4*	5*	6*	7*	8*
TP-33B	1/2" Gas Cock	1	1	1	1	1	1	1
TP-82	4" Refl. Cntr. Sprt.	2	3	4	5	6	7	8
TP-83	24" SS Flex Line	1	1	1	1	1	1	1
TP-105	Refl. Endcaps	2	2	2	2	2	2	2
TP-106	Refl. Endcap Clips	8	8	8	8	8	8	8
IOM	Install / Op Manual	1	1	1	1	1	1	1
SS ADD ON	When Applicable							

Stainless Steel upgrades are noted in the bottom row when applicable.

*175, 200 Models to have one TP-21B upgraded to Stainless Steel

						
4" Hanger TP-19B	4" Butt Clamp TP-21B	1/2" Gas Cock TP-33B	Bag of Reflector End Cap Clips. TP-106	24" SS Flex Connect TP-83	Reflector End Caps TP-105	Generic IOM (LIOGT) AND Series Insert (LIODX2)
Notes: *One 4" stainless steel butt clamp is provided for each 175,000-200,000 BTU model. Place as shown in IOM.						

Product Features

APPROVALS

- CSA.
- Indoor/Outdoor approval.
- Commercial/Industrial approval.

BURNER SIGHT GLASS

- For burner inspection.

COMBUSTION AIR INLET & VENT

- 4" Male duct.

ENAMELED CONTROL BOX

- Outside air collar (4") attached.
- Totally enclosed components.

CONTROLS

- 100% safety shut off.
- Moisture and corrosion resistant ignition module.
- Differential pressure sensing switch.
- Silicon carbide hot surface igniter.
- Flame rod sensing.
- Pre-purge controls.

EMMITER & COMBUSTION TUBES

- 16ga. 4" O.D. coated aluminized steel.
- All tubes coated with high temperature, corrosion resistant black coating .95 emissivity. Slip fit connection.
- Coated, titanium combustion chamber (150-200 MBTU/H models).

GAS CONNECTION

- 1/2" gas cock included.
- 7/8" flare-2' S.S. flex included.

WARRANTY *

- 1 year - Burner box components.
 - 5 years - Combustion and radiant tubes.
 - 10 years - Stainless steel burner.
- * See cover for warranty registration information.

OTHER

- Stainless steel upgrade available for harsh environments.
- One reflector center support per reflector.
- Turbulator baffle included.
- Visit www.reverberray.com
- Made in U.S.A.